558,541

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
9 December 2004 (09.12.2004)

PCT

(10) International Publication Number
WO 2004/105910 A2

(51) International Patent Classification[7]: B01D

(21) International Application Number:
PCT/US2004/013721

(22) International Filing Date: 3 May 2004 (03.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/474,068 28 May 2003 (28.05.2003) US

(71) Applicant *(for all designated States except US)*: **WATERS INVESTMENTS LIMITED** [US/US]; 109 Lukens Drive, New Castle, DE 19720 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **O'GARA, John, E.** [US/US]; 30 Bellview Heights, Ashland, MA 01721 (US). **DING, Julia** [CN/US]; 5790 Highland Way #204, Middleton, WI 53562 (US). **WALSH, Daniel** [US/US]; 9 Brookside Avenue, Danvers, MA 01923 (US).

(74) Agents: **LAURO, Peter, C.** et al.; Edwards & Angell, L.L.P., P.O. Box 55874, Boston, MA 02205 (US).

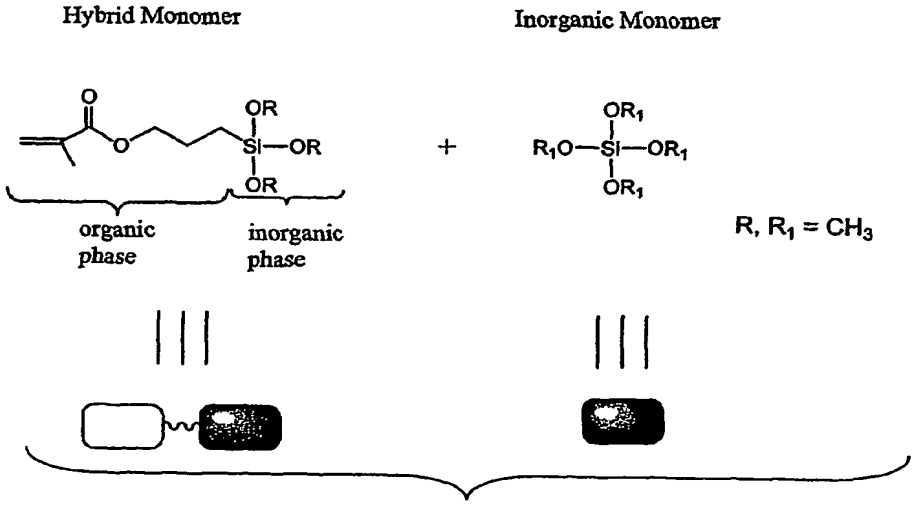
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: NOVEL NANOCOMPOSITES AND THEIR APPLICATION AS MONOLITH COLUMNS

Schematic Description of Monoliths Made by Polymerization Sol-Gel Reactions.



(57) Abstract: Novel materials for chromatographic separations, processes for their preparation, and separation devices containing the chromatographic materials. In particular, hybrid inorganic/organic monolith materials comprising a polymerized scaffolding nanocomposite (PSN), wherein the nanocomposite contains a scaffolding functionality capable of chemically interacting with a surface of a second material are described. The hybrid inorganic/organic materials have enhanced wall adhesion and increased resistance to shrinkage as compared to prior art monolith materials. The improved adhesion of the monoliths enable the preparation of capillary columns with an internal diameter (I.D.) ≥50μm.

WO 2004/105910 A2

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.